

High Performance (R-5) Windows Specifications

High Performance Windows Performance Specifications

| | Mandatory |
|--|---|
| Thermal Performance (fixed) (operable) | $U \leq 0.20 \text{ Btu/h-ft}^2\text{-F}$ $U \leq 0.22 \text{ Btu/h-ft}^2\text{-F}$ |
| Air Leakage | $\leq 0.30 \text{ cfm/ft}^2$ (See Certification Requirements) |
| Warranty (glass) Warranty (non-glass) | 20 years 10 years |
| Warranty Details | (glass) Warranted against visible obstruction through the glass caused by defect or failure of the air seal around the glass. Provider has option to repair, replace, or refund the glass. (non-glass) Product is warranted to be free from defects in manufacturing, materials, and workmanship. Provider has the option to repair, replace, or refund the defective materials and/or entire product. |
| Frame Color | All available frame colors are to be identified in the vendors' bid. White is a preferred option. |
| Size Categories | See Windows and Sliding Doors Matrices |
| Minimum Order | See Windows and Sliding Doors Matrices |
| Sales Reporting Requirements | <p>Volume Purchase Program vendors will be required to report window sales monthly to PNNL. The purpose of reporting sales is to assure PNNL that the products are sold to the buyers at no greater than the base bid price*. The sales data will not be shared with any other participant/vendor in the volume purchase program nor outside of PNNL or the U.S. Department of Energy. An example of a monthly sales report spreadsheet is attached. The monthly sales report will be e-mailed or faxed to Terry Mapes, PNNL Engineer. Terry.Mapes@pnl.gov; Fax: 509-372-4370 by the 10th working day of the following month.</p> <p>*The base bid price is the price of the product bid into the volume purchase program without customer-specified options and less sales tax and delivery at the time of the specified date of sale.</p> |

High Performance Windows Testing and Certification Requirements

| Testing and Certification | | Air Leakage (AL) | |
|---------------------------|--|------------------|--|
| <u>Performance</u> | Documentation of compliance and/or certification to be provided for the following: All products Certified with NFRC program and appearing with NFRC label indicating values for Thermal Performance (U-Factor), Solar Heat Gain Coefficient, and Visible Transmittance. | | The following methods and procedures are to be used for testing and certification: Air leakage measured using: NFRC 400-2004 (or later version) Procedure for Determining Fenestration Product Air Leakage or |
| <u>Structural</u> | and AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS) Standard/Specification for windows, doors and skylights, 05 or later version. Products must meet requirements for R-25 Performance Grade or higher. | | AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS) Standard/Specification for windows, doors and skylights, 05 or later version. |

High Performance Windows and Sliding Doors Matrices

| Single Hung | New (\$) | Retrofit (\$) | Double Hung | New (\$) | Retrofit (\$) | Slider | New (\$) | Retrofit (\$) | Tilt and Turn | New (\$) | Retrofit (\$) |
|-----------------|----------|---------------|-----------------|----------|---------------|-----------------|----------|---------------|-----------------|----------|---------------|
| up to 50 UI | | | up to 50 UI | | | up to 50 UI | | | up to 50 UI | | |
| 51-60 UI | | | 51-60 UI | | | 51-60 UI | | | 51-60 UI | | |
| 61-70 UI | | | 61-70 UI | | | 61-70 UI | | | 61-70 UI | | |
| 71-80 UI | | | 71-80 UI | | | 71-80 UI | | | 71-80 UI | | |
| 81-90 UI | | | 81-90 UI | | | 81-90 UI | | | 81-90 UI | | |
| 91-100 UI | | | 91-100 UI | | | 91-100 UI | | | 91-100 UI | | |
| per UI over 100 | | | per UI over 100 | | | per UI over 100 | | | per UI over 100 | | |

| Casement | New (\$) | Retrofit (\$) | Picture | New (\$) | Retrofit (\$) | Patio Doors | New (\$) | Retrofit (\$) |
|-----------------|----------|---------------|-----------------|----------|---------------|-------------|----------|---------------|
| up to 50 UI | | | up to 50 UI | | | L x H | | |
| 51-60 UI | | | 51-60 UI | | | 6' x 6'-8" | | |
| 61-70 UI | | | 61-70 UI | | | 8' x 6'-8" | | |
| 71-80 UI | | | 71-80 UI | | | 9' x 6'-8" | | |
| 81-90 UI | | | 81-90 UI | | | | | |
| 91-100 UI | | | 91-100 UI | | | | | |
| per UI over 100 | | | per UI over 100 | | | | | |

United Inches (UI) = Length + Width

Minimum orders = 15 for retrofit windows, 20 for new windows. Purchasers may meet this minimum through any combination of window types and sizes found on the program website. Vendors may choose to honor orders for less than the required minimums at their discretion. The contents of the bins in the above matrices may change during the course of the program at the discretion of PNNL.

December 18, 2009

Internal and External Low-e Storm Windows Specifications

Low-e Storm Windows Performance Specifications

| | Mandatory |
|--|--|
| Emissivity | < 0.22 |
| Warranty (glass) Warranty (non-glass) | 10 years 10 years |
| Minimum Glass Thickness | 3 mm |
| Warranty Details | If a defect appears during the term of the warranty, the provider can elect to: (1) repair the defective product, (2) replace the defective materials or (3) refund the purchase price. If replacement is elected, provider will not be responsible for installation or refinishing of replacement parts. |
| Frame Color | All available frame colors are to be identified in the vendors' bid. White is a preferred option. |
| Size Categories | See Storm Windows Matrices |
| Minimum Order | See Storm Windows Matrices |
| Sales Reporting Requirements | <p>Volume Purchase Program vendors will be required to report window sales monthly to PNNL. The purpose of reporting sales is to assure PNNL that the products are sold to the buyers at no greater than the base bid price*. The sales data will not be shared with any other participant/vendor in the volume purchase program nor outside of PNNL or the U.S. Department of Energy. An example of a monthly sales report spreadsheet is attached. The monthly sales report will be e-mailed or faxed to Terry Mapes, PNNL Engineer. Terry.Mapes@pnl.gov; Fax: 509-372-4370 by the 10th working day of the following month.</p> <p>*The base bid price is the price of the product bid into the volume purchase program without customer-specified options and less sales tax and delivery at the time of the specified date of sale.</p> |

Low-e Storm Windows Testing and Certification Requirements

| | Mandatory |
|----------------------------------|--|
| Testing and Certification | Test in accordance with the following standards: |
| <u>Performance</u> | All glass materials must be registered in the International Glazing Database with Lawrence Berkeley National Laboratory and measured in accordance with NFRC 300-09, 301-09, and 302-09. |
| | <i>and</i> |
| <u>Structural</u> | ANSI/AAMA 1002.10-93 (or later version). Documentation of testing from independent party is required, certification is not. Products must meet requirements for 15 Performance Grade or higher. |

Storm Windows Matrices

| Storm | New (\$) |
|--------------------|-------------|
| up to 40 UI | |
| 41-65 UI | |
| 66-90 UI | |
| 90-115 UI | |
| 116-140 UI | |
| per UI over 140 | |

United Inches (UI) = Length + Width